

What is claimed is:

- 1 1. An apparatus for use in an application
2 including at least one of clamping and valving, the
3 apparatus comprising:
4 a support structure; and
5 actuator means for operating the support
6 structure between a rest position and an actuated
7 position.
- 1 2. The apparatus of claim 1 wherein the
2 actuator means is a piezoelectric device.
- 1 3. The apparatus of claim 2 wherein the
2 support structure is a single piece.
- 1 4. The apparatus of claim 2 wherein the
2 support structure is a mechanically active element of the
3 apparatus.
- 1 5. The apparatus of claim 2 wherein the
2 support structure includes opposing resilient arm
3 portions biased to the rest position.
- 1 6. The apparatus of claim 5 wherein the arm
2 portions are driven from the rest position to the
3 actuated position in response to actuation of the
4 actuator means.
- 1 7. The apparatus of claim 6 wherein the arm
2 portions are biased to return to the rest position from
3 the actuated position in response to deactuation of the
4 actuator means.
- 1 8. The apparatus of claim 2 wherein the
2 support structure is made from one or more materials.

1 9. The apparatus of claim 2 wherein the
2 support structure is made from at least two materials
3 bonded together.

1 10. The apparatus of claim 2 wherein the
2 actuator means produces a spatial displacement when
3 actuated and the support structure includes a pair of
4 opposing arms disposed relative to the actuator for
5 amplifying the spatial displacement.

1 11. In an apparatus for use in an application
2 including at least one of clamping and valving having a
3 support structure and piezoelectric actuator, the
4 improvement comprising:
5 the support structure being a single piece.

1 12. The improvement of claim 11 wherein the
2 support structure is a mechanically active element of the
3 apparatus.

1 13. The improvement of claim 11 wherein the
2 support structure includes opposing resilient arm
3 portions biased to a rest position.

1 14. The improvement of claim 13 wherein the
2 arm portions are driven from the rest position to an
3 actuated position in response to actuation of the
4 actuator.

1 15. The improvement of claim 14 wherein the
2 arm portions are biased to return to the rest position
3 from the actuated position in response to deactuation of
4 the actuator.

1 16. The improvement of claim 11 wherein the
2 support structure is made from one or more materials.

1 17. The improvement of claim 11 wherein the
2 support structure is made from at least two materials
3 bonded together.

1 18. The improvement of claim 11 wherein the
2 actuator produces a spatial displacement when actuated
3 and the support structure includes a pair of opposing
4 arms disposed relative to the actuator for amplifying the
5 spatial displacement.

17. The improvement of claim 11 wherein the
support structure is made from at least two materials
bonded together.

18. The improvement of claim 11 wherein the
actuator produces a spatial displacement when actuated
and the support structure includes a pair of opposing
arms disposed relative to the actuator for amplifying the
spatial displacement.